**DEPARTMENT OF APPLIED MECHANICS AND BIOMEDICAL ENGINEERING**

**INDIAN INSTITUTE OF TECHNOLOGY MADRAS, IIT POST,**

**CHENNAI — 600 036, INDIA**

**PHONE: 044 22575057, FAX: 044 22574052**

**Dr. M.S. Sivakumar, Date: 07.03.2024**

**Professor & HoD**

**Ref No: AMBE/2023/MS/002- High Speed Camera Due Date: 15-03-2024**

Dear Sir,

Quotations are invited in duplicate for the various items shown below overleaf/enclosed list.

1. The quotations are to be in two parts as:

Technical Offer and as Commercial offer

The two parts of the offer are to be clearly marked on the envelopes. The two parts of the offer in separate envelopes must be enclosed in one bigger envelope duly sealed and super scribed with reference numb r and due date and must be addressed to the undersigned so as to reach him on o before the due date stipulated above.

2. The quotations duly sealed and subscribed on the envelope with reference no. and due date, should be addressed to the undersigned so as to reach him or before the due date stipulated above.

3. Quotations should be valid for 60 days from the due date and period of delivery indicated.

4. Local firms to quote for free delivery to the Institute. If quoted for Ex-godown delivery charges are indicated separately.

5. Relevant literature pertaining to the items quoted with full specifications.

6. Sales Tax/General Taxes/ED if applicable and such other taxes legally legible and intended to be claimed should be distinctly shown along with the price quoted. If this is not indicated no such claim will be admitted at any stage.

7. Goods should be supplied in carriage paid and insured.

8. Goods shall not be supplied without an official supply order.

9. Every effort will be made to make payment within 30 days from the to of bill/acceptance of goods whichever is later.

10. The Guarantee period of the item may be indicated clearly.

11. In case of LC. Payment 90% of the payment will be made after completion of the supply. The balance 10% of the payment will be made after satisfactory installation of the equipment.

12. IIT Madras is exempt from payment of Excise Duty and is eligible for concessional rate of custom duty. Necessary certificate will be issued on demand IIT Madras will make necessary arrangements for the clearance of imported goods at the Airport/Seaport. Hence the price should not include the above charges.

13. Acceptance and Rejection- I.I.T. Madras has the right to accept the whole or any part of the Tender or portion of the quantity offered or rejects it in full without assigning any reason.

14. Fax and Email quotations are not acceptable.

Yours faithfully,

Head of the Department – AMBE.

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**TECHNICAL SPECIFICATIONS OF High Speed Camera**

CMOS based Monochrome High Speed Camera with capability to capture at least 2,000 frames per second at 1MP resolution and 160,000 frames per second at reduced resolutions. The camera should be capable of recording blur free images with exposures of 5µs or less.

|  |  |  |
| --- | --- | --- |
| Specifications of High Speed Camera | | |
| **SL No** | **Parameter** | **Specification** |
| 1 | Resolution | 1.3 MP or better |
| 2 | Sensor | CMOS Monochrome with pixel size of ≥10µm. |
| 3 | Frame rate | ≥2,000 fps at 1.3 Mega pixels  ≥4,000 fps at 1024 x 512 pixels  ≥10,000 fps at 640 x 240 pixels  ≥160,000 fps at lower resolutions |
| 4 | High Speed RAM | 32GB or greater |
| 5 | Shutter Speed | ≤ 5µs |
| 6 | Dynamic Range | 12-bit Monochrome |
| 7 | Region of interest | Selectable in steps of ~ 128 x 8 pixels |
| 8 | Trigger Modes | Start, end, center, manual, random |
| 10 | ISO 12232 Ssat sensitivity | At least ISO 10,000 (Mono) |
| 11 | Trigger Options | Trigger from camera control software and external trigger using BNCs |
| 12 | Control Software | The camera control software should display the record parameters like frame rate, resolution, record duration, trigger mode, shutter speed etc before recording.  The camera control software should be capable to let the user review/ crop recorded video before saving.  The camera control software should have basic image processing tools like brightness, contrast, gamma.  The camera control software should assist the user in focusing of image.  The user should be able to correct lens distortion effects. |
| 13 | Operating temperature | At least up to 40 degree Celsius |
| 14 | Weight | ≤ 2 KG |
| 15 | Power Requirements | 100 to 240V, 50 to 60Hz AC |

Terms & Condition:

* Payment : 90% advance & 10% after installation
* Delivery : 1 Week from the date of the confirmed order.
* Installation & Commissioning : The Installation & Commissioning should be provided free of cost at IIT Madras.
* Training : Training to be provided by the supplier for one week.
* Minium 2 years warranty should be provided.
* Proof of supply of similar equipment to government or academic institutes to be provided.
* Distributers need to provide authorization certificate from the equipment supplier.
* Two-bid system will be followed. Technical compliance statement and price quotation to be submitted in separate envelops.

Yours faithfully,

Head of the Department – AMBE.

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CHENNAI — 600 036, INDIA

PHONE: 044 22575057, FAX: 044 22574052

**INFORMATION OF TENDER TO UPLOAD IN CPP PORTAL Date: 07.03.2024**

|  |  |  |
| --- | --- | --- |
| **1** | **Purchase from** | **INSTITUTE** |
| **2** | **Tender Reference No.** | **AMBE/2023/MS/002- High Speed Camera** |
| **3** | **Name of the item** | **High Speed Camera**  CMOS based Monochrome High-Speed Camera with capability to capture at least 2,000 frames per second at 1MP resolution and 160,000 frames per second at reduced resolutions. The camera should be capable of recording blur free images with exposures of 5µs or less.  Resolution-1.3 MP or better  Sensor-CMOS Monochrome with pixel of size of ≥10µm.  Frame rate-  ≥2,000 fps at 1.3 Mega pixels  ≥4,000 fps at 1024 x 512 pixels  ≥10,000 fps at 640 x 240 pixels  ≥160,000 fps at lower resolutions.  High speed RAM - 32GB or greater.  Shutter speed-≤ 5µs  Dynamic Range-12- bit Monochrome.  Region of interest - Selectable in steps of ~ 128 x 8 pixels  Triger modes- start,end,center,manual,random  ISO 12232 Ssat sensitivity- AtleastISO 10,000 (Mono)  Trigger Options-Trigger from camera control software and external trigger using BNCs  Control software:  The camera control software should display the record parameters like frame rate, resolution, record duration, trigger mode, shutter speed etc before recording.  The camera control software should be capable to let the user review/ crop recorded video before saving.  The camera control software should have basic image processing tools like brightness, contrast, gamma.  The camera control software should assist the user in focusing of image.  The user should be able to correct lens distortion effects.  Opening; temperature -Atleast up to 40 Degree Celsius.  Weight -≤ 2 KG  Power- 100 to 240v,50 to 60Hz AC |
| **4** | **Tender Category**  **(GOODS/WORKS/SERVICE** | Goods |
| **5** | **Type of Tender (Limited)** | Limited |
| **6** | **No. of Bids : ( 1/ 2)** | 2 |
| **7** | **Tender Start Date** | 28.02.2024 |
| **8** | **Tender Due Date & Time** | 07.03.2024 & 3 PM |
| **9** | **Bid Opening Date & Time** | 07.03.2024 & 4 PM |
| **10** | **Bid Opening venue** | Dept of Applied Mechanics& Biomedical Engg, FMB-106. |
| **11** | **Pre-bid meeting Date & Time** | - |
| **12** | **Pre-bid meeting venue** | - |
| **13** | **Quotation Validity Days** | 30 days |
| **14** | **Tender Validity Days** | 60 days |
| **15** | **Completion of work** | - |
| **16** | **Quotation May be Sent to (Inviting officer Name & Address)** | **Dr. M.S. Sivakumar,**  **DEPARTMENT OF APPLIED MECHANICS AND BIOMEDICAL ENGINEERING**  INDIAN INSTITUTE OF TECHNOLOGY MADRAS,  IIT POST,  Chennai – 600036. |
| **17** | **No of documents to be uploaded in CPP portal** | 3 |

Yours faithfully,

Head of the Department – AMBE.